Any Comment, Ray?

[redacted]

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Chemical Catalysis: Selected Catalytic Systems

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Record of the discussion on the topic "Preparation of membrane catalysts containing on their surface monodispersed particles of metals and alloys"

At the Topchiyev Institute of Petrochemical Synthesis and the Lumumba University of Peoples' Friendship in Moscow, from January 14 to 16, 1975, the progress of the "Preparation of membrane catalysts containing on their surface monodispersed particles of metals and alloys, and investigation with such catalysts of hydrogenation reactions" (under a program of the Joint Soviet-American Cooperation in the Field of Catalysis) was reviewed and discussed.

Prof. J. Turkevich (Princeton University, U.S.) reported in detail to the Soviet participants on the methods of applying monodispersed particles of platinum to samples of palladium-silver alloy, on the results of measuring the permeability to hydrogen in steady-state conditions of the membranes thus obtained, and on the investigation of their catalytic activity with regard to decomposition of hydrogen peroxide. Prof. Turkevich delivered four samples of palladium-silver alloy, on three of which monodispersed platinum particles had been applied.

Prof. Gryaznov reported on the results of investigating membrane catalysts of palladium-base alloys. These investigations were performed at the Institute of Petrochemical Synthesis and the Lumumba University. Prof. Yagodovskiy reported on the studies of electron interaction during chemosorption and catalysis on metals and alloys used at Lumumba University, and provided data.

Prof. Shishulis reported on the measurements of adsorption on the surface of palladium-nickel alloy pipes before and after their use as membrane catalysts.

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Prof. Pavlova reported on benzol hydrogenation on a palladium nickel membrane catalyst, and the effect of benzol adsorption on the permeability to hydrogen of this catalyst. Prof. Khrapova reported on the dependence of catalytic properties of binary palladium alloys on the nature and quantity of the second alloy component.

Dr. Mishchenko reported on the development by the Institute of a method for measuring the permeability to hydrogen of alloys in flow conditions, and on the construction of a laboratory reactor to test the catalytic properties of foil-shaped alloys. Prof. Turkevich requested and received the drawings of this reactor.

1. As a result of an exchange of opinions it was recognized to be advisable that the Institute and Lumumba University conduct, under flow conditions, measurements of hydrogen permeability of palladium alloy samples with 25% silver content, before and after application to their outer surface of monodisperse platinum particles.

2. The Institute and Lumumba University are to determine whether it is possible to restore hydrogen permeability of those palladium-silver alloy samples that have lost it following tests conducted at Princeton University.

3. To continue at Princeton University the development of a method for the application of monodispersed platinum and palladium particles onto palladium-silver alloys.

4. Determine at Princeton University the minimum quantity of platinum on a palladium-silver alloy that provides the level of catalytic activity, reached during the 1974 tests, following disintegration of hydrogen peroxide.

5. Princeton University is to prepare new specimens of membrane catalysts

of palladium-silver alloy in the form of test tubes and foil, after which they will be tested by the Institute and Lumumba University for hydrogen permeability and catalytic activity in hydrogenation reactions.

Prof. Turkevich has prepared an exchange student to be sent in 1975 to the Topchiyev Institute, and is prepared to receive an exchange student from that Institute or from Lumumba University at Princeton University.

The Director of the Topchiev Institute, N.S. Nametkin, and the Deputy Dean of Lumumba University, Prof. Shkalikov, exchanged views with Prof. Turkevich.

[s] Prof. J. Turkevich Prof. V.M. Gryaznov

January 16, 1975.